RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE FEBRUARY 2000
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSE-WIDE / 7	R-1 ITEM NOMENCLATURE PE1160407BB SOF Medical Technology Development

COST (Dollars in Millions)	FY99	FY00	FY01	FY02	FY03	FY04	FY05	Cost to Complete	Total Cost
PE1160407BB	1.945	3.863	2.065	2.107	2.149	2.190	2.229	Cont.	Cont.
S275 SOF MEDICAL TECHNOLOGY	1.945	3.863	2.065	2.107	2.149	2.190	2.229	Cont.	Cont.

A. Mission Description and Budget Item Justification

This program element provides studies, non-system exploratory advanced technology development and evaluations. The focus is on medical technologies, centering on physiologic, psychologic, and ergonomic factors affecting the ability of Special Operations Forces (SOF) to perform their missions. Current equipment and technology does not meet force requirements. The unique nature of special operations requires unique approaches to combat casualty care, medical equipment and other life support capabilities including life support for high altitude parachuting, combat swimming and other SOF unique missions. This program provides guidelines for the development of selection and conditioning criteria, thermal protection, decompression procedures, combat casualty procedures and life support systems. The program supports the development and evaluation of biomedical enhancements for the unique requirements of all SOF in the conduct of their diverse missions.

Change Summary Explanation:

Funding:

FY 2000 increase is a net result of additional funds appropriated by Congress for the Special Operations Medical Diagnostic System ($2.0M), as well as rescission of $63K, for project cost share of the Small Business Innovative Research program, Congressionally-mandated reductions, and revised Administration inflation assumptions.

FY 2001 decrease is project cost share of revised Administration assumptions.

Schedule: None.

Technical: None.

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B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget	1.962	2.039	2.078
Appropriated Value	2.015	4.039	
Adjustments to Appropriated Value / President's Budget	(.070)	(.176)	(.013)
Current Budget Submit	1.945	3.863	2.065

RDT&E PROJECT JUSTIFICATION SHEET (R-2A Exhibit)	DATE FEBRUARY 2000
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COST (Dollars in Millions)	FY99	FY00	FY01	FY02	FY03	FY04	FY05	Cost to Complete	Total Cost
S275, SOF Medical Technology R&D	1.945	3.863	2.065	2.107	2.149	2.190	2.229	Cont.	Cont.

A. Mission Description and Budget Item Justification

This project provides studies, non-system exploratory advanced technology development and evaluations. The focus is on medical technologies, centering on physiologic, psychologic, and ergonomic factors affecting the ability of Special Operations Forces (SOF) to perform their missions. Current equipment and technology does not meet force requirements. The unique nature of special operations requires unique approaches to combat casualty care, medical equipment and other life support capabilities including life support for high altitude parachuting, combat swimming and other SOF unique missions. This project provides guidelines for the development of selection and conditioning criteria, thermal protection, decompression procedures, combat casualty procedures and life support systems. The project supports the development and evaluation of biomedical enhancements for the unique requirements of all SOF in the conduct of their diverse missions. This effort is defined by the following seven areas of investigation:

- Combat casualty management will: (1) review the emergency medical equipment currently used in the SOF community and compare it to currently available civilian technology, and provide field testing of emergency medical equipment in the adverse environmental conditions encountered by SOF; (2) evaluate current tactical combat casualty care doctrine to ensure consideration of the wide variety of tactical scenarios encountered and apply the latest concepts in casualty care to these circumstances; and (3) develop CD-ROM and internet compatible automated programs to support SOF medical personnel information needs while operating in austere locations and medical interviews in multiple foreign languages.

- Decompression procedures for SOF diving operations will: (1) decrease the decompression obligation in SOF diving operations through the use of surface-interval oxygen breathing; and (2) investigate pre-oxygenation requirements for high-altitude SOF parachute operations.

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- Exercise-related injuries will evaluate the effectiveness of applying sports medicine diagnostic, therapeutic, and rehabilitative techniques in management of the traumatic and overuse injuries commonly encountered among SOF.

- Inhaled gas toxicology will evaluate the feasibility of using pharmacologic intervention to reduce or eliminate the possibility of central nervous system toxicity.

- Medical sustainment training techniques will: (1) examine novel ways of providing and documenting medical sustainment training for SOF corpsmen and physicians; and (2) develop a system for constantly upgrading the medical expertise of SOF medical personnel by incorporating new research reports and clinical information into a CD-ROM based computer system which can be used by medical personnel in isolated duty circumstances.

- Mission-related physiology will: (1) develop accurate measures to evaluate SOF mission-related performance; (2) evaluate the suitability of photorefractive keratectomy, a new refractive surgical procedure, for SOF personnel; (3) delineate nutritional strategies designed to help personnel apply known nutritional concepts to optimize performance in mission and training scenarios; (4) evaluate potential ergogenic agents as they apply to enhancing mission-related performance; (5) study the safety and efficacy of using caffeine to increase performance in sustained operations; (6) develop a quantitative test for night vision suitable for screening SOF candidates and study ways to enhance unaided night vision; (7) develop techniques for using oxygen to increase breathhold dive time; and (8) study pharmacologic measures to prevent acute mountain sickness in high altitude SOF operations.

- Thermal protection will: (1) conduct a survey of available thermal protection garments and conduct a comparative study to determine their relative effectiveness at protecting personnel engaged in small boat operations; and (2) evaluate the efficacy of current thermal protective measures in maintaining combat swimmer performance.

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FY 1999 ACCOMPLISHMENTS:

- (0.555) Continued ongoing studies as follows: Tactical Combat Casualty Care in SOF Operations, Ergogenics in Special Operations, Special Operations Interactive Medical Training Program, SOF Computer-Assisted Medical Reference System, Evaluation of a Special Operations Resuscitative and Surgical Suite, and Oxygen Arterial Gas Embolism Studies. (1QTR99-4QTR99)

- (1.390) Initiated new studies as follows: SOF Video-Based Interactive Tactical Combat Casualty Care Training, Characterization of SOF Mission-Related Performance Levels, Hemostatic Agents in Uncontrolled Hemorrhage, Adjuncts to Recompression Therapy in the Management of Dysbaric Diseases, Evaluation of Decompression Risk using the VVAL 18 Decompression Algorithm, Influence of Post-Landing Exercise on Altitude Decompression Sickness, Medical Informatics in Special Operations, High Altitude Parachute Operations after Diving, and Pelvic Ring Disruption Control. (1QTR99-4QTR99)

FY 2000 PLAN:

- (1.230) Continue ongoing studies as follows: Special Operations Interactive Medical Training Program, Tactical Combat Casualty Care in SOF Operations, Hemostatic Agents in Uncontrolled Hemorrhage, Evaluation of Decompression Risk using the VVAL 18 Decompression Algorithm, Influence of Post Landing Exercise on Altitude Decompression Sickness, High Altitude Parachute Operations after Diving, Ergogenics in Special Operations, and Characterization of SOF Mission-Related Performance Levels. (1QTR00)

- (2.633) Initiate new studies as follows: SOF Community Norm on the Mission-Related Performance Battery, Laser Insitu Keratomileusis in Special Operations, Casualty Evacuation Delays and Outcomes, SOF Medical Skills Utilization Study, VVAL 18 Dive Planner, Enhancement of SOF Medical Readiness Training through Human Patient Simulators, Warm Water Diving Studies, Health Surveillance in Deployed SOF Personnel, Respiratory Muscle Training Operational Enhancements, and Special Operations Medical Diagnostic System. (2QTR00)

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FY 2001 PLAN:

- (1.753) Continue ongoing studies as follows: Special Operations Interactive Medical Training Program, Tactical Combat Casualty Care in SOF Operations, Hemostatic Agents in Uncontrolled Hemorrhage, SOF Community Norm on the Mission-Related Performance Battery, Ergogenics in Special Operations, Laser Insitu Keratomileusis in Special Operations, Casualty Evacuation Delays and Outcomes, SOF Medical Skills Utilization Study, VVAL 18 Dive Planner, and Health Surveillance in Deployed SOF Personnel. (1QTR01)

- (0.312) Initiate new studies as follows: Post-Landing Exercise and Decompression Sickness Risk in High Altitude Low Opening Parachute Operations, Emergency Oxygen Decompression Procedures for the VVAL 18 Algorithm, and Hypoxia and High Altitude Parachute Operations. (2QTR01)

B. Other Program Funding Summary: None.

C. Acquisition Strategy: None.

D. Schedule Profile: None.